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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/683,329	12/14/2001	Robert C.U. Yu	D/A0A96Q	8628

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EXAMINER

KILKENNY, TODD J

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 04/23/2003

3

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-3

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/683,329	YU ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Todd J. Kilkenney	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____   |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: .  |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: Referring to paragraph [0057], in reference to Figure 6 applicant identifies the rabbeted tongues by 34 and 36. However, Figure 6 itself uses 24 and 26 to identify the rabbeted tongues. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1 – 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As presently claimed, the scope of applicant's claimed invention is unclear. Does producing first and second desired features on a first portion and second portion of the substrate support sheet define edge cutting (e.g. puzzle cutting) for butt joint seams (Applicant's Figure 2), or is such meant to define lap joint patterns (Applicant's Figures 5 and 6) or is such meant to be broad enough in scope to read on either forming butt joint patterns or lap joint patterns. Applicant is asked to clarify.

***Double Patenting***

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1 – 23 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 - 22 of copending Application No. 09/683326 in view of Yu et al (US 6,318,223) and/or Schlueter Jr et al (US 5,942,301). The claims of copending application No. 09/683326 appear to comprise all the limitations of claims 1 – 23 of the present application with the exception of claiming to place first and second pattern templates on respective first and

Art Unit: 1733

second portions of the substrate sheet. However, as evidenced by the cited references to Yu et al (Col. 5, lines 23 – 30; Col. 10, lines 43 – 46) and/or Schlueter Jr et al (See Table under Examples), the use of templates in laser cutting edges in first and second portions of a flexible support sheet is known in the formations of seamed belts. It therefore would have been obvious to one of ordinary skill in the art at the time of the invention to employ first and second patterned templates to aid in the laser cutting of the belt fabrication method of copending application 09/683326 as employing templates to define mating edge patterns in forming seam belts is known in the art as evidenced by Yu et al and/or Schlueter Jr et al. One of ordinary skill in the art would have been motivated to combine the known templates in forming the mating edge patterns in the seam belt fabrication method of copending application 09/683,326 as templates provide a much quicker and cleaner manner of accurately defining and limiting the cut pattern to that which is ultimately desired as is taken as knowledge generally available to one of ordinary skill in the art.

This is a provisional obviousness-type double patenting rejection.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Swift et al Rejection**

7. Claims 1 – 23 are rejected under 35 U.S.C. 103(a) as being obvious over Swift et al (US 6,436,502) in view of Schlueter Jr et al (US 5,997,974) and further in view of Yu et al (US 6,318,223) and/or Schlueter Jr et al (US 5,942,301).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). *For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).*

In U.S. 6,436,502 B1, Swift et al teach belts having overlapped end sections including puzzle cut seamed intermediate transfer belts having 3-dimensional seam structures and disclose that one relatively simple, low cost process for continuous manufacture of such seam structures is laser micro-machining. Referring to Figure 12, Swift et teach said laser micro-machining to be carried out by a fixed laser (76) projecting a laser beam (82) through mask (81) having a desired cutting pattern which illuminates the shapes of one or more features that are to be produced onto the belt substrate (85). A feature can be continuously cut from the belt by moving the belt material in relation to the fixed laser. After two ends of the belt are laser micro-machined to form the desired cut profiles (see Figures 5 and 6), which can include the use of plural lasers (e.g. a laser dedicated to each end of the belt), Swift et al suggest applying a suitable adhesive to the mating surfaces of the puzzle cut seams, interlocking the seam structures and curing the adhesive (Col 8. line 55 – Col. 9, line 28). Swift et al appear to not positively recite coating the formed seamed belt, however Swift et al suggest that in order to successfully transfer toner by electrostatic mechanisms onto and off of a seamed intermediate transfer belt, the electrical properties across and around the seam should be carefully controlled to produce a proper relationship with the remainder of the belt and therefore the presence of an overcoating should be taken into consideration for a given application (Col. 2, line 63 – Col. 3, line 24). Furthermore, Swift et al appear not to teach placing first and second pattern templates on first and second portions of the support sheet, respectively to prevent emissions from striking the support sheet there under.

US 5,997,974, hereafter US '974 teaches an invisible seam belt such as intermediate transfer belts (Col. 11, lines 16 – 22) and disclose that following fabrication of the belt, the belt may have an overcoating applied thereto to maintain the uniformity of the functional surface, wherein preferably, and by far the most economical matter is to form the belt seam initially and then apply the desired overcoating (Col. 10, lines 34 – 43). Additionally, US '974 further teaches employing the intermediate transfer belts in electrostatographic imaging members, wherein once the seam is bonded undercoating layers can be applied thereto to produce an “electrically invisible” seamed imaging member. Said undercoating layers include a charge-generating layer (Col. 4, lines 14 – 28; Col. 11, lines 23 - 33).

As to independent claims 1 and 16, it would have been obvious to one of ordinary skill in the art at the time of the invention to apply at least one coating to the intermediate seamed belt of Swift et al in view Swift et al themselves suggesting that the presence of an overcoating should be taken into consideration to help successfully transfer toner onto and off of a seamed intermediate transfer belt and US '974 suggesting that it is preferable to form the belt seam first and then apply the desired overcoating as such is the most economical manner.

Alternatively, in regard to independent claims 1, 11, 16 and 21, it would have been obvious to employ the intermediate seamed transfer belt of Swift et al as an electrostatographic member by applying undercoating layers to said seamed belt after the seam is bonded as suggested by US '974 so as to form a desirably “electronically invisible” seam. Said undercoating layers include a charge-generating layer that one of



Art Unit: 1733

ordinary skill in the art would readily appreciate to include photoconductive material as is conventionally known in the art.

As to the use of templates to prevent the emissions from striking certain portions of the belt (e.g. forming a puzzle pattern at the edges), in US 6,318,223, Yu et al teach a process for producing an endless seamed belt, wherein a template aperture in the form of a puzzle cut pattern is employed in combination with an excimer laser so that the laser cuts the width of the edges of the belt with an accurate puzzle pattern.

Furthermore, US 5,942,301 (hereafter US '301) to Schlueter Jr et al teaches forming a puzzle cut pattern for the mating ends of a seamed belt by any conventional shaping technique, including laser cutting with excimer laser generating beams (Col. 3, lines 39 – 44). US '301 also appears to suggest using a template as a control in the forming/cutting of this puzzle shape pattern (See Examples Table). It therefore would have been obvious to one of ordinary skill in the art at the time of the invention to employ first and second patterned templates to aid in the laser cutting of the belt fabrication method of Swift et al as employing templates to define mating edge patterns (puzzle patterns) in forming seam belts is known in the art as evidenced by Yu et al and/or US '301. One of ordinary skill in the art would have been motivated to combine the known templates in forming the mating puzzle edge patterns in the seam belt fabrication method of Swift et al as templates provide a much quicker and cleaner manner of accurately defining and limiting the cut pattern to that which is ultimately desired as is taken as knowledge generally available to one of ordinary skill in the art.

Art Unit: 1733

Applicant's dependent claims listed in the rejection heading above are all taught or rendered obvious by the teachings of Swift et al and/or the dependent references. That is, Swift et al positively suggest the use of more than one mask to induce desired 3D shapes (i.e. removing material from the substrate) (Col. 9, lines 13 – 23), inducing relative motion between the laser beam and the substrate (Col. 9, lines 9 – 12), employing an adhesive to join mated puzzle cut seams (Col. 9, lines 24 – 27), forming rabbeted joint patterns (see Figure 6) and providing the flexible substrate comprising a single layer of substantially homogeneous material comprising PET (Col. 5, lines 56 – 61).

As to the emissions being provided via a particle beam, Swift et al suggests a laser beam, however it would have been obvious to one of ordinary skill in the art to employ a particle beam (e.g. an electron beam) as such is considered to be a well known equivalent emission source to a laser wherein one of ordinary skill in the art would readily appreciate that by substituting a particle beam, only the expected results would be achieved.

As to ultrasonically welding, US '974 suggests as an alternative to employing adhesive to bond the interlocked seam together that the two ends of the seamed belt may be joined by heating such as by welding, including ultrasonic welding. It therefore would have been obvious to one of ordinary skill in the art at the time of the invention to join the seamed ends of Swift et al by ultrasonic welding as such is considered to be a known alternative to adhesive joining as evidenced by US '974 et al wherein one of ordinary would readily appreciate that only the expected connection would be formed.

**Yu Rejection**

In view of the above rejection's reliance on Swift et al (US 6,436,502) and the recognition that Swift et al is available art only under 102(e), which may be overcome, a second rejection incorporating Yu (US 5,688,355) is provided.

8. Claims 1 – 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schlueter Jr et al (US 5,997,974) in view of Yu (US 5,688,355) and further in view of Yu et al (US 6,318,223) and/or Schlueter Jr et al (US 5,942,301).

US 5,997,974, hereafter US '974, to Schlueter Jr et al teaches an invisible seam electrographic belt that is formed by first joining the ends of a flexible substrate to form a puzzle cut seam. The seamed belt may be joined by ultrasonic welding, or alternatively by applying adhesive between the two ends of the belt. The puzzle cut pattern may be formed according to any conventional shaping technique, such as laser cutting with commercially available lasers that generate a beam of sufficient width and intensity that will provide the desired cuts (Col. 5, lines 36 – 56; Col. 6, lines 61 – 64). US '974 further teaches the formed seam belt can be used in electrostatographic imaging members that includes providing undercoating layers over the bonded seam of the belt such that an "electrically invisible" seamed imaging member is produced (Col. 11, lines 16 – 33). Referring to Figure 10, the undercoating layers include a charge blocking layer (42), an adhesive layer (43), a charge-generating layer (44), a charge transport layer (45), and optionally a protective overcoating layer (46). US '974, while teaching to laser cut to form puzzle cut edges, fails to suggest employing first and second emissions to produce first and second desired features on a first and second portion of

Art Unit: 1733

the substrate sheet, respectively, wherein producing said first and second desired features includes removing material from the support sheet. Furthermore, while teaching to form a puzzle cut pattern for the mating edges via conventional techniques, including an excimer laser, US '974 appears not to teach placing first and second pattern templates on first and second portions of the support sheet, respectively to prevent emissions from striking the support sheet there under.

As to producing first and second desired features, including removing material from the substrate sheet, US 5,688,355, hereafter US '355 to Yu is cited as teaching a process for the fabrication of flexible belts using laser ablation. To eliminate the shortcomings associated with prior art seamed belts, US '355 teaches forming a thin profile seam structure from overlapped ends that are shaped altered into a specific configuration by removing materials from each end with a masked excimer laser prior to overlapping. To achieve this objective, a masked excimer laser beam is employed to reshape the two ends of a rectangular sheet to achieve a specific surface profile at the ends of the sheet prior to overlapping (Abstract; Col. 9, lines 55 – 64; Col. 13, lines 25 – 31; Col. 16, lines 58 – 63).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ the process of US '355, which includes forming a thin profile seam structure from overlapped ends that are shape altered into a specific configuration by removing materials from each end with a masked excimer laser, so as to form an overlapped joint in the puzzle seamed belt of US '974 that in combination with the puzzle mating, provides a joint that does not depend solely on an adhesive or welding

Art Unit: 1733

connection at the edges, but that also includes a material interlocking fit so as to provide a stronger connection with a smoother seam that eliminates shortcomings associated with prior art seamed belts as recognized by the secondary teaching of US '355.

As to the use of templates to prevent the emissions from striking certain portions of the belt (e.g. forming a puzzle pattern at the edges), US 6,318,223, hereafter US '223 to Yu et al teach a process for producing an endless seamed belt, wherein a template aperture in the form of a puzzle cut pattern is employed in combination with an excimer laser so that the laser cuts the width of the edges of the belt with an accurate puzzle pattern. Furthermore, US 5,942,301 (hereafter US '301) to Schlueter Jr et al teaches forming a puzzle cut pattern for the mating ends of a seamed belt by any conventional shaping technique, including laser cutting with excimer laser generating beams (Col. 3, lines 39 – 44). US '301 also appears to suggest using a template as a control in the forming/cutting of this puzzle shape pattern (See Examples Table).

It therefore would have been obvious to one of ordinary skill in the art at the time of the invention to employ first and second patterned templates to aid in the laser cutting of the belt fabrication method of US '974 as employing templates to define mating edge patterns (puzzle patterns) in forming seam belts is known in the art as evidenced by US '223 and/or US '301. One of ordinary skill in the art would have been motivated to combine the known templates in forming the mating puzzle edge patterns in the seam belt fabrication method of US '974 as templates provide a much quicker and cleaner manner of accurately defining and limiting the cut pattern to that which is ultimately desired as is taken as knowledge generally available to one of ordinary skill in the art.

Art Unit: 1733

As to the emissions being provided via a particle beam, it is recognized that US '974 suggest employing an excimer laser, however it would have been obvious to one of ordinary skill in the art to employ a particle beam (e.g. electron beam) as such is considered to be a well known equivalent emission source to a laser wherein one of ordinary skill in the art would readily appreciate that by substituting a particle beam, only the expected results would be achieved.


### ***Conclusion***

¶. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Todd J. Kilkenny** whose telephone number is **(703) 305-6386**. The examiner can normally be reached on Mon - Fri (9 - 5).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

TJK  
April 18, 2003

  
Michael W. Ball  
Supervisory Patent Examiner  
Technology Center 1700